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ABSTRACT

New ways of work and new workers and workplaces need education and training systems and occupational classification systems based on the skills that different occupations share rather than on the industry sectors to which they belong. This new approach to providing occupational information (career majors or clusters or pathways) corresponds to requirements of the School-to-Work Opportunities Act and has been promoted for a long time as an approach to integration of academic and vocational content to prepare students for the workplace. Issues involved in career pathways include inconsistency in the clustering of occupations (both in career pathways and in occupational information systems), resistance to career pathways, and implementation problems. But there are success stories about overcoming barriers and concerns, and the Office of Adult and Vocational Education in the U.S. Department of Education has introduced 16 new career clusters and begun setting up partnerships to establish curriculum frameworks and standards for each cluster. The potential effectiveness of career pathways has been enhanced by the U.S. Department of Labor's new public online, skill-driven occupational information system O*NET, which replaces the task-driven "Dictionary of Occupational Titles." (This document contains an annotated bibliography listing 28 references, including four Web sites.) (KC)

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ERIC Clearinghouse on Adult, Career, and Vocational Education

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TRENDS AND ISSUES ALERT NO. 20

2000

Career Pathways

The changing nature of workers, work, and the workplace means that information about them needs to be organized and provided in a different way than in the past. Education and training systems and occupational classification systems should be based on the skills that different occupations share rather than on the industry sectors to which they belong (McCage and Olson 1995). This new approach to providing occupational information corresponds to requirements of the School-to-Work Opportunities Act with its expanded concept of *integrated learning* organized into coherent sequences of academic and occupational study around broadly conceived career majors (National School-to-Work Learning & Information Center [NSWLIC] 1996).

Such broadly focused career majors, or clusters, or *pathways*, had been advocated and used for some time as one of a variety of approaches to integration of academic and vocational content to prepare students for the workplace (Grubb 1995; Pucel 2001). As more attention was focused on career pathways as a tool for career decision making and workplace preparation (Jansen and Lewis 1996; NSWLIC 1997), more states took action to consider, recommend, develop, or adopt a set of career pathways (Finch et al. 1997; Wills 1997).

Issues involved in career pathways have also surfaced, including inconsistency in the clustering of occupations, both in career pathways and in occupational information systems (ibid.), resistance to career pathways (Vo 1996), and implementation problems and pitfalls (Hoachlander 1999; Paris and Huske 1998). On the other hand, success stories focused on overcoming barriers and concerns (Linn 1998; Lozada 1997; U.S. Department of Education 1998). Most recently, the Office of Adult and Vocational Education in the U.S. Department of Education introduced 16 new career clusters and began setting up partnerships to establish curriculum frameworks and standards for each cluster; it is too early to know what effect the 16 new career clusters will have ("Will ED's Career Clusters Change Voc Ed?" 2000).

The potential effectiveness of career pathways has recently been enhanced by the U.S. Department of Labor's new public, online, skills-driven occupational information system O*NET, which replaces the task-driven ***Dictionary of Occupational Titles*** (Mariani 1999). O*NET joins state online career information systems (***CareerZone*** 2000; ***CIS for Windows*** 2000) as perhaps the cutting edge of systems to organize and provide information about work, workers, and the workplace based on the skills shared by occupations rather than on industry sectors—in other words, based on the same concept that is the foundation of career pathways.

The resources and websites listed here provide additional information about career pathways.

Resources

Alaska Department of Education and Early Development. ***Six Proposed Career Pathways for Alaska.*** Juneau: ADEED, 2000. <http://www.eed.state.ak.us/tls/stw/6paths.html>
Lists skills, abilities, and possible entry-level, skilled, and professional careers for each of six proposed pathways.

CareerZone. Albany: New York State Department of Labor. 2000. <http://www.explore.cornell.edu/newcareerzone>
Career exploration website designed to provide students with information (wages, job outlook, skills, abilities, and required experience) on over 1,100 occupations, organized in six broad career clusters, found in the O*NET database.

The Changing Nature of Work: Implications for Occupational Analysis. Washington, DC: National Academy Press, 2000. <http://www.nap.edu/books/0309065259/html/>
Concludes that increasing heterogeneity of workers, work, and the workplace requires a new approach to occupational classification systems by worker attributes, processes, and outputs and organizational factors affecting all three; recommends continued use and development of O*NET.

CIS for Windows. Boise: Idaho Career Information System, 2000. <http://www.sde/state.id.us/cis/c4w.htm>
Public website of the Idaho Career Information System (CIS), part of the national *intoCareers* network, providing computerized career information about education and work in Idaho. Information can be accessed within six career pathways.

Doherty, S. ***Career Pathways in Alaska.*** Juneau: Alaska Department of Education and Early Development, 2000. <http://www.eed.state.ak.us/tls/STW/pathwaysoverview.html>
Explains benefits, essential characteristics, and structuring options of pathways; recommends six pathways commonly used by other states.

Edling, W. H., and Loring, R. M. "Blueprints for Building Curriculum." ***Techniques*** 72, no. 8 (November-December 1997): 26-28.
Describes the Curriculum Integrator, a step-by-step framework for integrating academic and vocational curricula involving career clusters.

Finch, C. R.; Frantz, N. R; Mooney, M.; and Aneke, N. O. ***Designing the Thematic Curriculum: An All Aspects Approach.*** MDS-956. Berkeley: National Center for Research in Vocational Education, University of California, 1997. (ED 413 541)
Describes career clusters and majors as an option in designing the thematic curriculum—education linked to and embedded in a broad content theme. Provides examples of career clusters, pathways, and majors.

Grubb, W. N., ed. ***Education through Occupations. Volume 1. Approaches to Integrating Academic and Vocational Education.*** New York: Teachers College Press, Columbia University, 1995. (ED 392 921)
Chapter 4, "A Continuum of Approaches to Curriculum Integration," by Grubb, describes occupational clusters, career paths, and majors as a more thorough approach to content integration, facilitating collaboration among teachers and enhancing career counseling. Chapter 6, "Coherence for All Students: High Schools with Career Clusters and Majors," also by Grubb, profiles schools with clusters and discusses the crucial elements of cluster-based schools.

Hoachlander, G. ***Integrating Academic and Vocational Curriculum–Why Is Theory So Hard to Practice? Centerpoint No. 7.*** Berkeley: National Center for Research in Vocational Education, University of California, 1999. (ED 433 454)
Advocates career clusters and industry majors as one of four ways to integrate academic and vocational curricula for increased academic achievement.

Horne, R. L., and Thuli, K. J. ***School to Work Fact Sheets: Making School to Work Opportunities Happen for Youth with Disabili-***

ties. Washington, DC: National Transition Alliance for Youth with Disabilities, 1998. (ED 422 686)
Gives an overview of the School-to-Work Opportunities Act; discusses how career pathways and contextual learning can be used as a strategy for serving all youth, including youth with disabilities.

Idaho Division of Vocational Education. "Career Pathways." ***Agricultural Education Magazine*** 69, no. 1 (July 1996): 9-16.
Practical overview of career pathways as preparation for both work and further learning; lists instructional programs and recommended courses for six career pathways.

Jansen, D. G., and Lewis, W. B. ***Potential Impact of the Implementation of Cluster Programs in Trade and Industrial/Technical Education in Colorado: Final Report.*** Ft. Collins: School of Education, Colorado State University, 1996. (ED 399 382)
Survey found cluster programs used in other states were positively accepted by industry and educators; local Colorado directors reported cluster programs more effective than traditional programs in career decision making and workplace preparation.

Linn, D. ***Preparing Students for the Twenty-First Century.*** Washington, DC: National Governors Association, 1998. <http://www.nga.org/Pubs/IssueBriefs/1998/980413Students.asp>
Discusses the role career pathways can play in a unified education system integrating academic and skill standards.

Lozada, M. "Getting Off the Track to Nowhere." ***Techniques*** 72, no. 8 (November-December 1997): 38-41.
Contrasts the different experiences of one student: dropout and failure in a high school general track versus persistence and success in a postsecondary career pathway program.

Mariani, M. "Replace with a Database: O*NET Replaces the Dictionary of Occupational Titles." ***Occupational Outlook Quarterly*** 43, no. 1 (Spring 1999): 2-9.
Describes the rationale for development of O*NET as a skills-driven rather than task-driven occupational information system.

McCage, R. D., and Olson, C. M. ***Observations Regarding a Revised Standard Occupational Classification System Using a Skills Based Concept.*** Decatur, GA: Vocational-Technical Education Consortium of States, 1995. (ED 412 364)
Recommends building an occupational classification system based on skill groupings rather than industry sectors and organized under 12-14 major occupational families; defines what the process would require.

National School-to-Work Learning & Information Center. ***Curriculum Integration in School-to-Work Systems. Resource Bulletin.*** Washington, DC: NSWLIC, 1996. <http:/www.stw.ed.gov/factsht/bull1196.htm> (ED 407 515)
School-to-Work Opportunities Act requirements broaden the meaning of *curriculum* to integrated learning organized into coherent sequences, around broadly conceived career majors, including work experience as well as academic and occupational study.

National School-to-Work Learning & Information Center. ***Career Pathways in School-to-Work Systems. Resource Bulletin.*** Washington, DC: NSWLIC, 1997. <http://www.stw.edu.gov/factsht/bul0326.htm> (ED 407 532)
Explains the nature and purpose of career pathways; discusses issues and effective practices in implementing pathways; cites organizations providing relevant resources.

Paris, K., and Huske, L. ***Critical Issue: Developing an Applied and Integrated Curriculum.*** Oak Brook, IL: North Central Regional Educational Laboratory, 1998.
Discusses integration issues including goals, strategies (e.g., occupational clusters and majors, career paths), action options, pitfalls, different viewpoints, and illustrative cases.

Pucel, D. J. ***Beyond Vocational Education. Career Majors, Tech Prep, Schools within Schools, Magnet Schools & Academies.*** Larchmont, NY: Eye on Education, 2001.
Provides a rationale, model, and procedures for implementing career-based education as an applied, context-based, community-based approach to high school reform.

U.S. Department of Education. ***New American High Schools: Profiles of the Nation's Leading Edge Schools.*** Washington, DC: USED, 1998. (ED 419 302)
Profiles 10 exemplary schools, 5 of which have career pathways, "constellations," or academies (David Douglas High School, Encina High School, Thompson School District, William H. Turner Technical High School, and Walhalla High School).

Vo, C.-D. "When the Walls Break Down." ***Vocational Education Journal*** 71, no. 4 (April 1996): 18-23, 48.
Recounts the positive and negative experiences of a secondary technical school whose innovative curriculum, involving career pathways, has been considered a model.

"Will ED's Career Clusters Change Voc Ed?" ***STW Reporter*** 6, no. 4 (July 2000): 2-5.
Explains background, purpose, and details of 16 new career clusters established by the Office of Vocational and Adult Education, U.S. Department of Education; describes first partnerships established to develop curriculum standards and framework for schools.

Wills, Joan. ***Standards: Making Them Useful and Workable for the Education Enterprise.*** Washington: Office of Vocational and Adult Education, U.S. Department of Education, 1997. (ED 410 461)
Reviews the history and theory of occupational clusters and their role in academic-vocational integration, career pathways, and career progression; Attachment D lists state career pathway/major/cluster status at the time of publication.

Websites

Career Clusters. <http://www.ed.gov/offices/OVAE/clusters> Website of the Office of Vocational and Adult Education, U.S. Department of Education, providing links to partnerships involved in establishing curriculum framework and standards for OVAE's 16 new career clusters.

intoCareers. <http://cis.uoregon.edu/organization.htm> Website of a national network of 12 states using the Career Information System (CIS) to deliver career planning information to students in schools and adults using career and employment training services.

National Skill Standards Board (NSSB). <http://www.nssb.org> Information on NSSB, its 15 industry sectors, convening groups, and voluntary partnerships (developing skill standards, assessment systems, and implementation plans for specific industry cluster).

O*NET Online. <http://online.onetcenter.org> Interactive public website for the U.S. Department of Labor's Occupational Information Network™ searchable by occupation or skill; search results include most important features and specific details of selected occupation, related occupations, and crosswalk to other occupational classification systems.

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